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PATENT APPLICATION

ATTORNEY DOCKET NO. 10004754-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Jia et al.

Confirmation No.: 4732

Application No.: 09/845,869

Examiner: La Rose, Colin M.

Filing Date: 04/30/2001

Group Art Unit: 2627

Title: Automatic Generation of Frames for Digital Images

Mail Stop Appeal Brief - Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF REPLY BRIEF

Transmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on 10/17/2005.

This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months of the date of the Examiner's Answer.

(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new ground rejection.)

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Respectfully submitted,

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Appl. No.	:09/845,869)
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Applicant	:Jia et al.)
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Title	:Automatic Generation of Frames for Digital Images)
)
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TC / Art Unit	:2627)
Examiner	:LaRose, Colin M.)
)
Docket No.	:10004754-1)
Customer No.	:022879)

Commissioner for Patents
P.O. Box 1450
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APPELLANTS' REPLY BRIEF

Sir:

This Reply Brief is presented in opposition to the Examiner's Answer mailed 10/17/2005. Appellants are appealing from the Final Rejection of claims 1-2, 5-8, 12-17, and 19-29.

Please refer to Appellants' Appeal Brief (Amended) for additional arguments and for further detail, as this Reply Brief is particularly directed to the Examiner's Answer.

I. ARGUMENT

A. Claims 1-2, 5-8, 12-17, and 23-29 were improperly rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,140,348 by Jamzadeh et al. (“Jamzadeh ‘348”) in view of U.S. Patent No. 5,889,578 by Jamzadeh (“Jamzadeh ‘578”)

As to a rejection under §103(a), the U.S. Patent and Trademark Office (“USPTO”) has the burden under §103 to establish a *prima facie* case of obviousness by showing some objective teaching in the prior art or generally available knowledge of one of ordinary skill in the art that would lead that individual to the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Manual of Patent Examining Procedure (MPEP) section 2143 discusses the requirements of a *prima facie* case for obviousness. That section provides as follows:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must be found in the prior art, and not based on applicant’s disclosure.

Appellants contend that claims 1-2, 5-8, 12-17, and 23-29 were improperly rejected because the applied references, alone or in combination, do not teach or suggest all of Appellants’ claim limitations, and there is no suggestion or motivation to modify the reference or to combine reference teachings. Such a suggestion or motivation could be possible only in hindsight and in light of Appellants’ teachings.

1. The cited references in combination do not teach or suggest all the limitations of Appellants’ claims.

Independent claim 1 recites:

1. A method for automatically generating a framed digital image, comprising:
 - (a) analyzing a portion of a first data set representing pixels of an unframed digital image so as to identify a plurality of image components each corresponding to a spatial region of the pixels;
 - (b) independently analyzing each of the image components to determine a set of component characteristics for the corresponding image component;
 - (c) collectively analyzing the plurality of sets of component characteristics to determine overall image characteristics indicative of subject matter of the unframed image;
 - (d) analyzing the overall image characteristics to determine an image category corresponding to the subject matter;
 - (e) determining at least one frame attribute by applying framing rules for the image category to the overall image characteristics; and
 - (f) generating a second data set representing pixels of the framed digital image, the second data set defining a representation of the unframed digital image surrounded by a frame having the at least one frame attribute. (step designators (a)-(f) added for reference purposes)

The Examiner states “It appears that the Appellant’s [sic] primary argument pertaining to claim 1 is that the ‘348 and ‘578 patents are not properly combinable to achieve the claimed invention” (Examiner’s Answer, p.9). This is not a correct statement of Appellants’ position. Appellants contend that, even if properly combinable (which Appellants do not concede), the Jamzadeh ‘348 reference and the Jamzadeh ‘578 reference, alone or in combination, fail to teach or suggest all the limitations of Appellants’ claim 1, as explained in detail below. Furthermore, since dependent claims 2, 5-8, 12-17, and 23-29 include all the limitations of claim 1, the cited references cannot teach or suggest all the limitations of these dependent claims.

a) The Examiner’s contends incorrectly that the Jamzadeh ‘348 reference in combination with the Jamzadeh ‘578 reference teaches or suggests all the limitations of independent claim 1.

Appellants’ understanding of the Examiner’s position with regard to claim 1 is as follows:

- 1) The ‘578 reference teaches steps (a) through (d): “The ‘578 patent was also relied upon to teach the four claimed analyzing steps for determining the image category”

(Examiner's Answer, p.11).

2) The '348 reference teaches step (f): "As established in the Final Rejection, ... the '348 patent was considered to disclose the ... generating steps" (Examiner's Answer, p.9).

3) The '348 reference teaches a portion of step (e): "As established in the Final Rejection, ... the '348 patent was considered to disclose the ... determining steps, except for the "image category" aspect contained in the determining step. What the '348 patent does not appear to disclose is determining a frame attribute by applying framing rules *for the image category*. Instead, the '348 patent discloses determining which colors in the image are dominant and then generating a picture frame based on the dominant color" (Examiner's Answer, p.9; emphasis in original).

4) The '578 reference equates the dominant color of the '348 reference with the image category of the '578 reference: "For all intents and purposes, the '578 patent equates the dominant color and the image category" (Examiner's Answer, p.11).

5) The '578 reference combined with the '348 reference teaches all the limitations of step (e): "On the basis of this teaching, one skilled in the art would have recognized that determining a frame attribute by applying framing rules for a *dominant color* is equivalent to determining a frame attribute by applying framing rules for an *image category*" (Examiner's Answer, p.11; emphasis in original).

b) The Examiner incorrectly contends that the Jamzadeh '578 reference equates the dominant color and the image category.

In the '348 reference, the "dominant color" is defined as "the color that appears most frequently in the image" (col. 4, lines 66-68).

With further regard to claim 1, step (e), the Examiner states that "the prior art of record establishes that it was conventional to equate the dominant color with the category" (Examiner's Answer, p.10).

Appellants contend that the Examiner is incorrect. The '578 reference does not teach that the dominant color equates, or is equivalent to, the image category. This is clearly

evident with reference to the flowchart of Fig. 7. In identifying the image category or subject matter of the image, “first it is determined whether the center of image is darker or lighter from the peripheral regions. From that the indoor/outdoor condition is surmised. To determine the type of outdoor images, the histogram of upper outer region is obtained” (col. 6, lines 51-56). Such a determination of the indoor/outdoor condition based on darkness or lightness has nothing to do with the dominant color.

In other words, the ‘578 reference doesn’t look at the dominant image color and then identify an image category that corresponds to the dominant color. Rather, it first compares the darkness or density of central regions of the image with the darkness or density of peripheral regions of the image, in order to determine whether it is an outdoor or indoor scene. For example, if the central regions are lighter than the peripheral regions, it suggests an indoor scene, while if the peripheral regions are lighter than the central regions, it suggests an outdoor scene (col. 5, lines 34-65).

Furthermore, even when the dominant color is subsequently used to assist with further image categorization – such as by computing color histograms of certain regions of the image – the dominant color does not equate to the image category or subject matter.

If the image was identified as an outdoor scene, color histograms are computed for the peripheral regions since “outdoor scenes that are dominated by a certain feature will show strong color properties once a color histogram is plotted for them. The major (dominant) colors of the frame could be determined by examining these histograms of the three color channels (R,G,B). The outdoor scenes are usually full of certain colors, e.g., green from the trees and grass, blue from the sky and water, white and gray from the snow or clouds, brown from dirt, rocks and sand” (col. 5, line 66 – col. 6, line 8). As can be understood from Fig. 7, a dominant color of light green in the peripheral regions indicates that the subject matter includes a background of a yard or trees. A dominant color of light blue indicates that the subject matter includes a background of the sky. A dominant color of white indicates that the subject matter includes a background of snow or clouds. A dominant color of dark blue/dark green indicates that the subject matter includes a background of the seashore.

Similarly, if the image was identified as an indoor scene, color histograms of the

central regions are computed. A dominant color of skin tones indicates that the subject matter of the central region is a portrait.

It is important in considering the above to understand that the ‘578 reference does not equate the subject matter of the image with the dominant color of the image. The dominant color is merely one characteristic, along with density and spatial frequency, used by the ‘578 reference in combination to determine an image category or identify the subject matter of the image. For example, while a light green dominant color of an outdoor scene is indicative of a yard or trees, a light green dominant color of an indoor scene is not indicative of a yard or trees being indoors. Similarly, while a white dominant color of an outdoor scene is indicative of clouds or snow, a white dominant color in an indoor scene is not indicative of clouds or snow in the house; it is more likely indicative of an overexposure by flash. As another example, a dominant skin tone color in the upper peripheral region of an outdoor scene is not indicative of people flying through the air. The ‘578 reference teaches that the identification of image category or subject matter is far more complex than merely identifying a dominant color of the image. Accordingly, the ‘578 reference teaches away from equating the dominant color with the image category.

- c) The Jamzadeh ‘348 reference in combination with the Jamzadeh ‘578 reference does not teach or suggest all the limitations of Appellants’ claim 1 at least in that the limitations of step (e) are not taught or suggested by the combined references.**

First of all, it is noted that the Jamzadeh ‘578 reference is directed to categorizing images on a roll of film so that the corresponding images can be processed according to the customer’s wishes for images of that category (Abstract). There is no teaching whatsoever about generating a border or frame for any of the images that are to be printed; it is silent as to framing.

The Examiner relies on equating the image category to the dominant color of the image, since the ‘348 reference teaches to “create a border color in one of the dominant colors

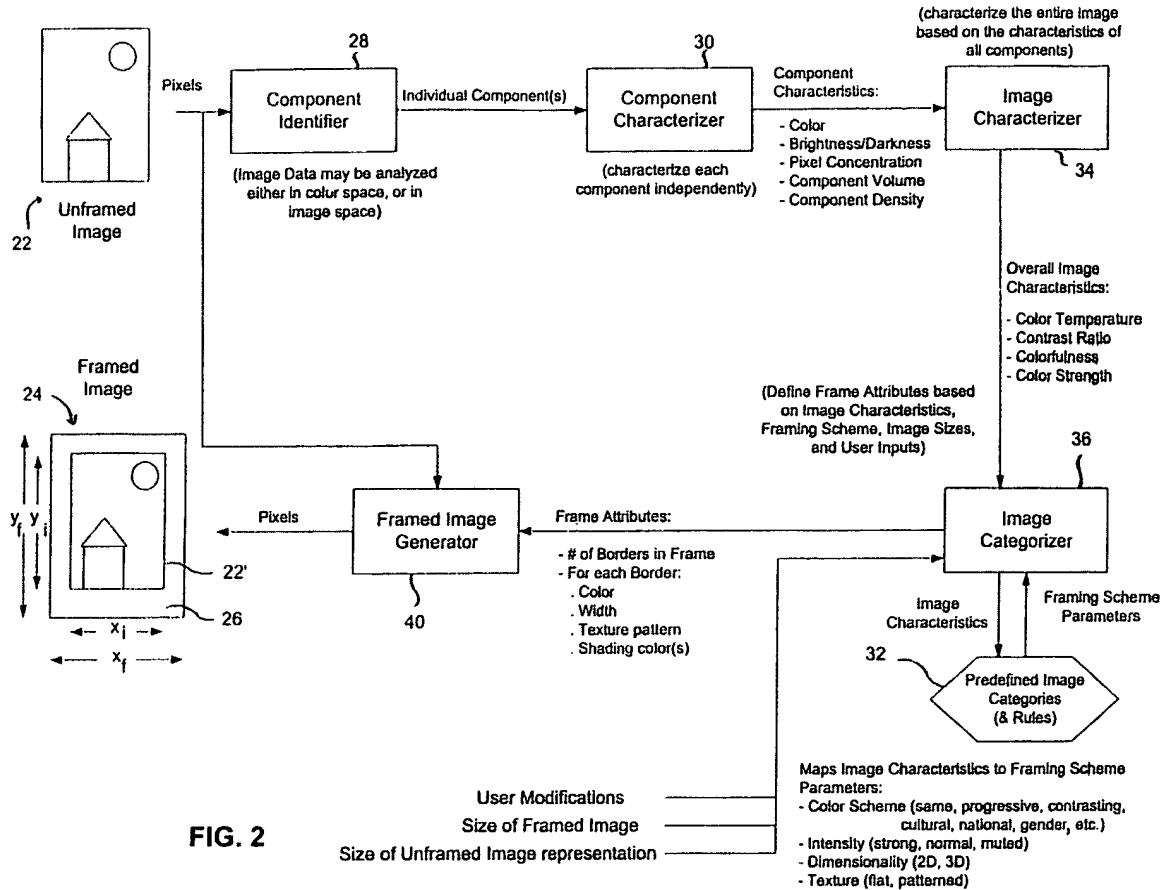
of the multicolor image” (Abstract). In the Advisory Action, he explained it this way: “Jamzadeh ’348 frames the image based on the dominant color(s) in the image. The dominant colors indicate what type of image is to be framed – a greenish image, or a more yellow image, or a mostly reddish image, etc. These are essentially ‘categories’ of images, and the category is determined by the dominant color or colors present in the image” (Advisory Action, p.2).

It is clear from claim 1, steps (c) and (d), that the image category corresponds to the subject matter of the image, not to a color hue. Appellants have further argued above that the ‘578 reference does not equate the dominant color with the image category.

Step (e) of claim 1 recites “determining at least one frame attribute by applying framing rules for the image category to the overall image characteristics” (emphasis added). For example, and with reference to Tables I and II, if the subject matter of the image is the portrait of a person, the framing rules specify that a “complementary” frame color (i.e. an opposite hue to the dominant color) will be chosen for the frame if the overall image has normal contrast, while a “light” frame color (i.e. the same hue as the dominant color but with increased lightness) will be chosen for the frame if the overall image has high contrast. If the subject matter is a landscape scene, the framing rules specify that a “similar” frame color (i.e. a hue adjacent in color space to the dominant color) will be chosen for the frame if the overall image is predominantly green or blue, while a “contrasting” frame color (i.e. a hue adjacent in color space to the opposite hue of the dominant color) will be chosen for the frame if the overall image is predominantly brown. Nothing like this is taught or suggested by the cited references, alone or in combination.

d) To equate the dominant color and the image category would give no meaning to the limitations of claim 1, steps (c), (d), and (e).

Furthermore, to equate the image category with merely the dominant color would have the effect of impermissibly giving no meaning to the limitations of steps (c), (d), and (e) of claim 1. Consider Fig. 2 of Appellants’ application, reproduced below:



Mapping claim 1 to Fig. 2, step (a) may be performed by component identifier 28. Step (b) may be performed by component characterizer 30. Step (c) may be performed by image characterizer 34. Steps (d) and (e) may be performed by image categorizer 36 and predefined image categories (& rules) 32. Step (f) may be performed by framed image generator 40. The dominant color or colors of the image are among the various component characteristics determined by component characterizer 30. If all that is to be done is to frame the image with the dominant color or colors, the output of component characterizer 30 could be sent directly to framed image generator 40, completely bypassing image characterizer 34, image categorizer 36, and predefined image categories (& rules) 32. Therefore, to equate the

image category with the dominant color would have the effect of giving no meaning to the limitations of steps (c), (d), and (e).

In summary, even if the '348 and '578 references are properly combinable, which Appellants do not concede, the combined teachings or suggestions do not teach or suggest all the limitations of claim 1. The limitations of claim 1 are not obvious in light of the references except in hindsight, impermissibly using the teachings of Appellants' own invention. See, e.g., ATD Corporation v. Lydall, Inc., 48 USPQ 2d 1321, 1329 (Fed. Cir. 1998) (*"Determination of obviousness can not be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention."*).

2. The cited references are not properly combinable.

The standard under which references in an obviousness rejection are properly combinable has been stated as follows:

"The invention that was made, however, does not make itself obvious; that suggestion or teaching must come from the prior art. *See, e.g., Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051-52, 5 USPQ 2d 1434, 1438 (Fed. Cir. 1988) (it is impermissible to reconstruct the claimed invention from selected pieces of prior art absent some suggestion, teaching, or motivation in the prior art to do so); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985) (it is insufficient to select from the prior art the separate components of the inventor's combination, using the blueprint supplied by the inventor); *Fromson v. Advance Offset Plate, Inc.*, 755 F.2d 1549, 1556, 225 USPQ 26, 31 (Fed. Cir. 1985) (the prior art must suggest to one of ordinary skill in the art the desirability of the claimed combination)." *C.R. Bard, Inc. v. M3 Sys., Inc.*, 48 USPQ 2d 1225, 1232 (Fed. Cir. 1998)

Appellants contend that the Jamzadeh '348 reference and the Jamzadeh '578 reference are not properly combinable.

a) There is no suggestion or motivation to combine the references in the

references themselves.

As discussed in greater detail in the Appeal Brief (Amended), the Jamzadeh ‘348 reference directed to image framing is silent on image categorization, while the Jamzadeh ‘578 reference that discloses image categorization is silent as to image framing. There is no suggestion or motivation to combine the references in the references themselves, and thus the references are not properly combinable at least based on this ground.

b) There is no suggestion or motivation to combine the references in the knowledge generally available to one of ordinary skill in the art.

A “person of ordinary skill is a hypothetical person who is presumed to be aware of all the pertinent prior art.” Custom Accessories Inc. v. Jeffrey-Allan Indus., 1 USPQ 2d 1196, 1201 (Fed. Cir. 1986). “Inventors, as a class, ... possess something — call it what you will — which sets them apart from the workers of *ordinary* skill. Standard Oil Co. v. American Cyanamid Co., 227 USPQ 293, 297 (Fed. Cir. 1985). In other words, an inventor is presumed to be a person of extraordinary skill in the art, and as such is presumed to be aware of at least all the pertinent prior art of which one of ordinary skill in the art would be aware. Therefore, if it were obvious to a person of ordinary skill to combine references, it certainly would be obvious to a person of extraordinary skill in the same art area to do so.

At the time that the patent application that eventually matured into the Jamzadeh ‘578 reference was filed on October 26, 1993, the Jamzadeh ‘348 reference had already issued as a patent on September 28, 1990, and thus was prior art. The hypothetical person of ordinary skill would be presumed, therefore, to be aware of the Jamzadeh ‘348 reference, as would one of extraordinary skill. With regard to the references in this case, inventor Jamzadeh, the sole inventor of the Jamzadeh ‘578 reference, does not merely have constructive knowledge of the Jamzadeh ‘348 reference but also actual knowledge, because he is also a joint inventor of the Jamzadeh ‘348 reference. Furthermore, the Jamzadeh ‘578 reference cites in the specification three other related U.S. patents – 4,994,827; 5,151,717; and 5,175,628 – on which inventor

Jamzadeh is a sole or joint inventor. Yet there is no mention within the four corners of the Jamzadeh '578 reference of the Jamzadeh '348 reference. Appellants believe that if it had been obvious to inventor Jamzadeh to combine the image categorization of the Jamzadeh '578 patent application with the image framing of the Jamzadeh '348 reference, the Jamzadeh '348 reference would have also been cited in the Jamzadeh '578 patent application and such a beneficial feature noted.

The Examiner stated that "Appellant [sic] fails to cite, any statutory authority, common law principles, administrative rules, or the like, which favor such a proposition" (Examiner's Answer, p.12). In response, Appellants point to the authority cited above, and contend that the failure of inventor Jamzadeh to provide any suggestion that the two references could be combined is strong evidence that there was no knowledge generally available to one of ordinary skill in the art at the time Appellants' invention was made that would have suggested or motivated combining the Jamzadeh '348 reference with the Jamzadeh '578 reference. Accordingly, the suggestion or motivation for such a combination could only result from impermissible hindsight and in light of Appellants' teachings.

B. Claims 19-20 were improperly rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,140,348 by Jamzadeh et al. ("Jamzadeh '348") in view of U.S. Patent No. 5,889,578 by Jamzadeh ("Jamzadeh '578"), and claim 21 was improperly rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,140,348 by Jamzadeh et al. in view of U.S. Patent No. 5,889,578 by Jamzadeh and further in view of U.S. Patent No. 5,600,412 by Connors

Independent claim 19 recites:

19. An image processing apparatus, comprising
 a component identifier adapted to receive a first data set of pixels representing an unframed digital image and identify a plurality of individual image components therefrom;
 a component characterizer communicatively coupled to the component identifier for determining a set of component characteristics for each of the individual image components;
 an image characterizer communicatively coupled to the component characterizer for determining overall image characteristics from the collective plurality of sets of component

characteristics, the overall image characteristics indicative of subject matter of the unframed image;

an image categorizer communicatively coupled to the image characterizer for determining from the overall image characteristics an image category corresponding to the subject matter;

framing rules usable by the image categorizer to automatically define at least one frame attribute based on the image category and the overall image characteristics; and

a framed image generator for processing the first data set and the at least one image attribute so as to automatically generate a second data set having rows and columns of pixels representing a framed digital image including a representation of the unframed digital image surrounded by a visually attractive frame having the at least one frame attribute.

Dependent claims 20-21 include all the limitations of independent claim 19.

For similar reasons as argued heretofore with reference to claim 1, Appellants believe that the cited references, alone or in combination, do not teach or suggest a component identifier, a component characterizer, an image characterizer, an image categorizer, or framing rules structurally and functionally configured as in claim 19. Furthermore, since dependent claims 20-21 include all the limitations of claim 19, the cited references cannot teach all the limitations of these dependent claims.

Therefore, Appellants contend that claims 19-21 were improperly rejected because the applied references, alone or in combination, do not teach or suggest all of Appellants' claim limitations. Furthermore, and also as argued heretofore with reference to claim 1, Appellants believe that there is no suggestion or motivation to modify the reference or to combine reference teachings. Such a suggestion or motivation could be possible only in hindsight and in light of Appellants' teachings.

C. Claim 22 was improperly rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,140,348 by Jamzadeh et al. ("Jamzadeh '348") in view of U.S. Patent No. 5,889,578 by Jamzadeh ("Jamzadeh '578")

Independent claim 22 recites:

22. A program storage medium readable by a computing apparatus and embodying a program of instructions executable by the computing apparatus for automatically generating a

visually pleasing framed digital image from an unframed digital image, the program storage medium comprising:

- a first logical segment of the instructions configured to analyze a portion of a first data set representing pixels of the unframed digital image so as to identify a plurality of image components each corresponding to a region of the pixels;

- a second logical segment of the instructions configured to independently analyze each of the image components to determine a set of component characteristics for the corresponding image component;

- a third logical segment of the instructions configured to collectively analyze the plurality of sets of component characteristics to determine overall image characteristics indicative of subject matter of the unframed image;

- a fourth logical segment of the instructions configured to analyze the overall image characteristics to determine an image category corresponding to the subject matter;

- a fifth logical segment of the instructions configured to determine at least one frame attribute by applying framing rules for the image category to the overall image characteristics; and

- a sixth logical segment of the instructions configured to generate a second data set representing pixels of the framed digital image, the pixels defining a representation of the unframed digital image surrounded by a frame having the at least one frame attribute.

For similar reasons as argued heretofore with reference to claim 1, Appellants believe that the cited references, alone or in combination, do not teach or suggest a program storage medium with logical segments of instructions structurally and functionally configured as in claim 22.

Therefore, Appellants contend that claim 22 was improperly rejected because the applied references, alone or in combination, do not teach or suggest all of Appellants' claim limitations. Furthermore, and also as argued heretofore with reference to claim 1, Appellants believe that there is no suggestion or motivation to modify the reference or to combine reference teachings. Such a suggestion or motivation could be possible only in hindsight and in light of Appellants' teachings.

II. CONCLUSION

Appellants contend that claims 1-2, 5-8, 12-17, and 19-29 were improperly rejected because the applied references, alone or in combination, do not teach or suggest all of

Appellants' claim limitations, and there is no suggestion or motivation to modify the reference or to combine reference teachings. Such a suggestion or motivation could be possible only in hindsight and in light of Appellants' teachings.

Each of these reasons alone distinguishes Appellants' claims from the cited references and makes Appellants' claims non-obvious in light of the cited references.

Accordingly, the Office has failed to establish a prima facie case of obviousness based on the prior art.

Overruling of the Examiner's rejections of claims 1-2, 5-8, 12-17, and 19-29 is respectfully requested.

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If any charges or fees must be paid in connection with the foregoing communication (including but not limited to the payment of an extension fee or issue fees), or if any overpayment is to be refunded in connection with the above-identified application, any such charges or fees, or any such overpayment, may be respectively paid out of, or into, the Deposit Account No. 08-2025 of Hewlett-Packard Company. If any such payment also requires Petition or Extension Request, please construe this authorization to pay as the necessary Petition or Request which is required to accompany the payment.

Respectfully submitted,



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